A DISCOURSE ON INOCULATION.

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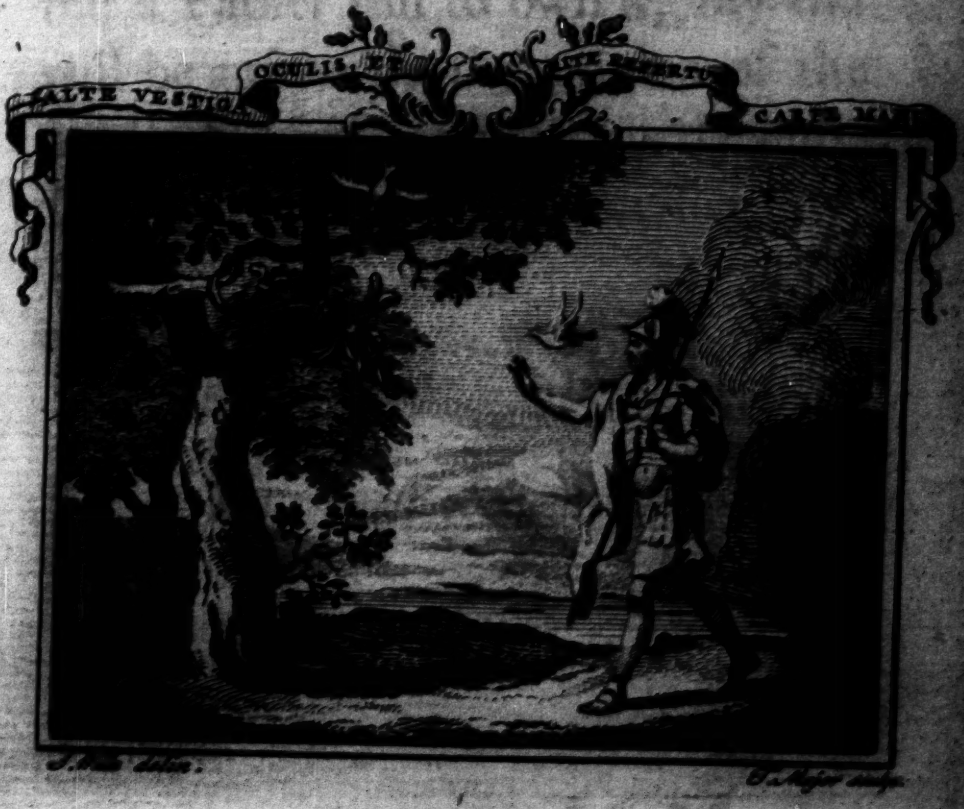
A DISCOURSE ON INOCULATION,

Read before the Royal Academy of Sciences at *Paris*, the 24th of *April* 1754.

By Mr. *LA CONDAMINE*.

Knight of the military Order of St. Lazarus, Fellow of the Royal Society, and Member of the Royal Academies of Sciences at *Paris* and at *Berlin*.



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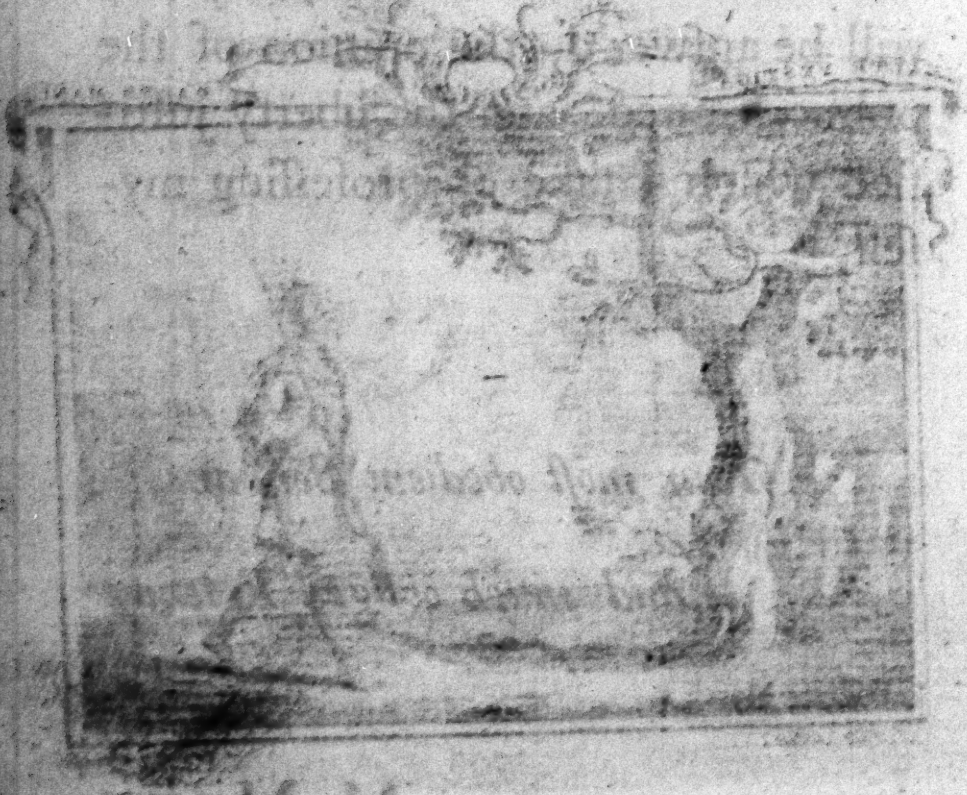

To the Author.

SIR,

TO your friendſhip I owed the firſt communication of your diſcourſe. The ſame principle makes it a duty in me to offer you this tranſlation. If the new dreſs, in which it now appears, ſhould permit a Father ſtill to own it, my end will be anſwer'd, the opinion of the public ſecured, and the liberty juſtified which I take of profeſſing myſelf,

SIR,

Your moſt obedient Servant,

and much obliged Friend,

London, March 4, 1755.

M. MATY.

PREFACE of the Tranſlator.

THE *ſubject of this diſcourſe, and the* [illegible] *it gave to the numerous and learned aſſembly, before which it was read, were my inducements to venture upon a tranſlation of it. As I export ſix times a year, from this Iſland, ſuch accounts of its Literary Productions as may be entertaining or inſtructive to our neighbours, I thought it was but juſt, in return, to import, now and then, from abroad, ſuch works, as may tend to the advancement of ſcience and the good of the community.*

The name of Mr. La Condamine *is not unknown to thoſe, who have heard of that laborious expedition to the Equator, perform'd by three members of the Royal Academy of Sciences at* Paris, *to meaſure the firſt degrees of the meridian, and by that means to aſcertain the real figure of the earth. The fatigues and obſtructions, as well of the moral as of the phyſical kind, theſe gentlemen met with in a*

ten

ten years journey, over icy Alps, and amidst a jealous and superstitious people, can only be equal'd by the sagacity, accuracy, and perseverance, with which they conducted and completed their work. They did not confine themselves to the object of their mission; they found time for many other researches. By the united labours of Messrs. Bouguer *and* La Condamine, *the* Newtonian *system no longer wants that ocular demonstration, which its great author despaired that human industry could ever arrive at*. The only good history of the tree that bears the Jesuit's bark, we owe to the last of these gentlemen †, who examined it in its natural soil. He likewise, for the advancement of science, chose the most difficult rout in his return to* Europe, *in order to give us his curious and instructive description of the longest and least known river in the world ‡.*

But although these different researches have deservedly raised the reputation of their author, none has done him more honour than this discourse on Inoculation. The learned and unlearned, the court as well as the city,

appeared

* Newton *de Mundi Systemate*, p. 26, et 27.

† Mem. de l'Ac. des Sc. de Paris, anno 1738. p. 226.

‡ His account of the river of the *Amazons* was publish'd in *English* some years ago.

appeared equally well pleaſed with this performance, and if our laſt informations are true, there is room to think, that his moſt chriſtian Majeſty may be induced to follow the example that a British *Prince firſt gave.*

As Mr. la Condamine's *ſentiments upon Inoculation were far from being agreeable to the notions of his countrymen, it is not difficult to gueſs at the reaſons which conciliated to him the favour firſt of his audience, and then of his readers:* Quid Pericles? de cujus dicendi copia ſic accepimus, ut, cum contra voluntatem Athenienſium loqueretur pro ſalute patriæ, ſeverius tamen id ipſum, quod ille contra populares homines diceret, populare omnibus et jucundum videretur.*

Our French Pericles *has not only collected, with equal care and judgment, the moſt important pieces that have been publiſhed in* England *about the inſertion of the ſmall-pox, he has likewiſe made uſe of thoſe which his own and other nations could furniſh him with. By the help of theſe materials, ſome of which are little known in* England, *he has compiled a hiſtory of this method more compleat than any yet publiſhed.*

To

* Cicero de Orat. III. 34.

To be acquainted with the origin of uſeful inventions, to trace their progreſs and their revolutions, to obſerve the difficulties with which they ſtruggle, and the means by which they riſe, is not a matter of mere curioſity: it directs us in the moſt important of all ſtudies, that of the human mind, and of the motives by which it is influenced.

The very different reception Inoculation met with among ſome unenlightened Aſiaticks *and* Americans, *and among the civilized inhabitants of one of the moſt conſiderable nations in* Europe, *may teach us not to think reaſon confined to any ſpot of ground. It has been many times obſerved, and cannot be too often repeated, that unaſſiſted nature is a much ſurer guide to truth, than the greateſt learning attended with prejudice and paſſion. Were honeſt* Montaigne *to ſpeak the mind of his countrymen about the people, who, for ought we know, invented Inoculation, would he not ſay,* Tout cela ne va pas trop mal: mais quoy? ils ne portent point de haut de chauſſes?†

Yet let us not be unjuſt to the enemies of this Aſiatick *method: they too pretend to reaſon: to plain facts they oppoſe, what learned prejudice*

† Eſſais de Montaigne, 1. 30.

prejudice ſeldom wants, and what the Circaſſians *never dreamt of,* metaphyſical arguments. *Theſe unſubſtantial monſters reſemble* Virgil's *Gorgons and Chimeras, and our author, like the poet's hero, no ſooner attacks them, but he finds that they are mere ſhadows.*

——— tenues ſine corpore vitas
Miratur volitare cava ſub imagine formæ ;*

or rather, that after they are ſtript of their form, they change ſides, and fight for that very cauſe they were brought to oppoſe.

The method which our author follows in aſcertaining the degree of confidence we may place in Inoculation, is not only uſeful in this caſe; it is of the ſame importance in moſt of our actions. It conſiſts in fairly ſtating the probability on both ſides, and determining for that which has the greateſt appearance of proving ſucceſsful and beneficial. Happy would it be for mankind, if in all caſes the odds were as much on one ſide as they ſeem to be in this!

The generous impartiality which Mr. la Condamine *every where expreſſes in mentioning other nations, together with the love he manifeſts for his own, beſpeak him at once the*

* Virgil. Æneid. VI.

the Coſmopolite *and the* Patriot, *an ornament to his own country, as he would have been to any. He endeavours to engage his fellow-citizens not to reject a beneficial invention, becauſe it was firſt adopted by their rivals. Self-intereſt, and what ſometimes is ſtill more prevailing, emulation, are the motives he urges. Should they at laſt prevail over prejudice and bigotry, what an inward ſatisfaction muſt he feel, to whom his country will every year owe many thouſands of lives!*

The gentleman and the fine writer appear through the courſe of this performance, no leſs than the philoſopher and the patriot. If he forces conviction by the ſtrength of his arguments, he no leſs engages the attention by the beauty of his images, and the livelineſs of his ſtile.

To preſerve in a tranſlation the ſpirit of the original, to make a French *orator ſpeak before a* Britiſh *audience, is by no means an eaſy taſk: Every nation has a peculiar taſte adapted to their manners, and to their genius. He that applies to the paſſions of men, (and eloquence is founded upon the paſſions) muſt know the arts to pleaſe, and theſe arts vary according to different times or climates.*

Whether a tranſlation ought to appear a perfect original, or whether it ought not in ſome degree to bear the ſtamp of the time and place in which the author wrote, has been much diſputed; and it would ill become me to enter into the controverſy. I ſhall only ſay, that if, notwithſtanding my endeavours to naturalize my author, he ſhould ſtill retain ſomething of the foreigner in his countenance or addreſs, no man has in this reſpect a juſter claim to the indulgence of the public than myſelf.

The obligations I have to ſome learned friends, who were pleaſed to look over theſe ſheets, and to aſſiſt me with their advice, I can never ſufficiently acknowledge. It would be a real ſatisfaction to me, were I permitted to name them. But the public will not be biaſſed, and I have not vanity enough to think this a proper place for their names.

A few notes of my own I have ventured to add to thoſe of the original; they are diſtinguiſhed by particular marks, and will not, I hope, appear altogether impertinent or uſeleſs. They tend in general to confirm the doctrine delivered in the diſcourſe; they may rectify a few miſtakes in the facts or the computations;

and from my friend I had full leave to make them.

They who will be at the trouble to compare the edition of this discourse *published at* Paris *with this translation, will find in the latter many things inserted in the text. These additions were sent me by the author himself: He was willing, that the nation, for which he every where professes the highest regard, and whose observations are the basis of his work, should before all others receive it in its most perfect state; or rather, he was sensible that what his discourse must needs lose in my hands, could never be supplied better than by his own.*

* l'Memoire sur l'Inoculation de la petite vérole lu à l'assemblée publique de l'Académie Royale des Sciences, le Mecredi 24 Avril, 1754, par Mr. de la Condamine, Chevalier de l'ordre militaire de S. Lazare, de l'Académie Royale des Sciences, des Sociétés Royales de Londres et de Berlin. A Paris, chez Durand Libraire, rue S. Jaques, 1754.

POSTSCRIPT.

THIS preface was already in the press, when I receiv'd from his Excellency Mr. Portet, *his Majesty's ambassador at* Constantinople, *the following account about the introduction and present state of Inoculation in the East. This gentleman, whose humanity and learn-*

learning are no leſs eminent than his capacity and zeal in the high poſt he ſo worthily fills, obliged me with ſome new facts relating to the inſertion of the ſmall-pox. Theſe I lay before the public, knowing that a good cauſe has nothing to fear from truth, and that truth was Mr. La Condamine's *object as well as mine.*

Conſtantinople, Feb. 1. 1755.

"Inoculation is practiſed at preſent among "the *Greeks*, and notwithſtanding reli- "gious ſcruples, among the Romaniſts. "With the few I have known, it generally "ſucceeded, but the numbers will not ad- "mit of compariſon; there are not per- "haps twenty in a year inoculated. The "*Timoni* family pretend that a daughter "had been inoculated at ſix months old *, "but afterwards acquired the ſmall-pox in "the natural way, and died at twenty- "three years; the evidence is doubtful. "*Timoni*'s account is incorrect, his facts "are not to be depended on. *Pylarini* is "more exact. It was neither *Circaſſians*, "*Georgians*, nor *Aſiatics* that introduced "the practice; the firſt woman was of the "*Morea*, her ſucceſſor was a *Boſniac*; they "brought

* We may queſtion whether the operation did ſucceed upon the child, and the falſity of ſimilar reports ſpread at leſs diſtance of time or place may induce us to preſume it did not.

" brought it from *Theſſaly*, or the *Peloponneſus* now *Morea*. They properly ſcarify'd the patient, commonly on many parts, ſometimes on the forehead under the hair, ſometimes on the cheeks, and on the radius of the arm. A father told me, that the old woman not being able through age to make the inciſion on his daughter with a razor, he performed that operation. The needle has alſo been uſed. *Turks* never inoculate; they truſt to their *fatum*. Whence it had its origin ſeems here unknown. A capuchin friar whom I often ſee, was on a miſſion in *Georgia* for above ſixteen years, he is about two years return'd; he is a grave, ſober man, who gives an hiſtorical account of the virtues and vices, good and evil, of that country with plainneſs and candour. The uſual introduction and ſecurity of theſe miſſionaries is the pretence to the practice of phyſic, that in deſtroying bodies they may ſave ſouls, ſo that this honeſt man who is extremely ignorant, was in high reputation both as phyſician and confeſſor; it was therefore impoſſible, as he himſelf obſerves, that either the public or private practice of inoculation could be concealed from him, but he has moſt ſolemnly declared to me repeatedly,

" peatedly, that he never heard one word " about it at *Akalſike*, *Limerette*, or *Tifflis*; " he is perſuaded that it has never been " known amongſt them. He has often and " frequently attended the ſmall-pox, which " is almoſt certain death there, and gene- " rally if not always of the confluent kind."

The teſtimony of this reverend friar ſeems to render doubtful what has been ſaid about the Georgians *preſerving the beauty of their girls by this invention. It is indeed by no means impoſſible, but that the* Circaſſians *are alone in poſſeſſion of the ſecret, as the people of* Wales *are ſaid to have had it excluſive of any other part of this iſland. One may even ſuſpect that if the motive of our inoculating women ſellers was the making the moſt of this their ſtaple commodity, they had ſufficient inducement to conceal this lucrative practice from their neighbours. Yet, as the authors who named the* Circaſſians *as being poſſeſs'd of the method time out of mind, did the ſame honour to the* Georgians *and other nations upon the borders of the* Caſpian-ſea, *and as theſe authors belong to a nation which now, no leſs than in former times, deſerves the appellation of* Græcia mendax, *I think it may be proper to ſuſpend our judgment till we receive further informations about the true origin of this method.*

London, April 17, 1755.

A DISCOURSE ON INOCULATION.

THE ſmall-pox, that cruel and loathſome diſeaſe, of which we carry the ſeeds in our blood, deſtroys, maims, or diſfigures the fourth part of mankind. This ſcourge of the old continent, has depopulated the new, more than the ſword of its conquerors. It is an inſtrument of death, and ſtrikes without any regard to age, ſex, rank, or climate. Few families eſcape paying the fatal tribute it exacts. It is chiefly in cities, and in the moſt ſplendid courts, that it makes the greateſt havock,[a] and the higher the perſons it attacks

[a] It is obſerved, that the ſmall-pox is commonly more dangerous in cities, and chiefly to adults, and to children too tenderly brought up; whether this effect is owing to a different temperature of the air, to the nature of the food, or to ſome other cauſe, I ſhall not pretend to determine.

attacks are placed in life, the more dreadful are its ſtrokes.

To ſtop the courſe of ſo many evils, Inoculation offers itſelf as a ſure preventive, avowed by reaſon, confirmed by experience, permitted, nay authoriſed, by religion. Such a method ſurely deſerves the countenance of a wiſe legiſlature, as tending both to the preſervation and increaſe of mankind.

How far we are warranted to uſe and enjoy this bleſſing of providence, ſhall be the ſubject of the following inquiry, which may be divided into three parts. In the firſt ſhall be ſtated the chief hiſtorical facts relating to Inoculation. In the next ſhall be conſidered what objections have been, or may be raiſed againſt the practice of it: And in the laſt I ſhall draw ſome inferences from the principles eſtabliſhed in the two firſt parts, and then venture a few obſervations of my own.

PART

PART I.

HISTORY OF INOCULATION.

THE Inoculation of the small-pox by incision or puncture has been in use time out of mind in *Circassia*, *Georgia*, and the countries bordering on the *Caspian* sea[a]. Tho it was in manner unknown in *Europe*, it was nevertheless practised very near us in that part of *England* called *Wales*[c]. The same operation formerly known, but since disused, in *Greece* and *Turkey*, was revived at *Constantinople*, towards the end of the last century[d], by a woman of *Thessaly*, who performed that operation with great success, though chiefly among the common people[e]. Earlier still, even in the beginning of the XVIIth century, [f] the small-pox was communicated in *China* without any incision,

[a] *Timoni's Letter.* See hereafter.

[c] Extract of some letters inserted by Dr. *Jurin*, at the end of his *letter to Mr.* Caleb Cotesworth, *&c.*

[d] *Anno* 1673. See the *Treatise of Inoculation by Dr. Burini.* I can find this date no where else.

[e] *Pylarini.* See hereafter.

[f] Letter of father *d'Entrecolles.* See *Lett. édifiantes et curieuses. Tom. XX.*

ciſion, by ſnuffing up the matter of the puſtules dried and reduced to a powder. All theſe facts lay buried in a total oblivion, when *Emanuel Timoni*, a *Greek* phyſician, and a member of the univerſities of *Oxford* and *Padua*, having undertaken to ſpread Inoculation and bring it into repute, gave a circumſtantial deſcription of it in a letter to Dr. *Woodward*, dated from *Conſtantinople*, *December* 1713. He declares, that where, after having cloſely attended that operation for ſeven or eight years, he found but two inſtances of ill ſucceſs, and even theſe not to be imputed to the operation [s].

James

[s] Two children of three years old, both ſubject to epileptic and ſcrophulous diſorders, who were inoculated by order of their parents, ſeemed to be cured of the ſmall-pox, but died, the one of a bloody-flux, the 32d day, the other of a maraſmus the 40th after the operation. The author adds, that the parents were ſuſpected of having themſelves deſigned the death of theſe children, whom their infirmities render'd troubleſome. See the extract of *Timoni*'s letter in the *Phil. Tranſ.* N°. 339. It is likewiſe to be met with, but without a date, abridged and worded differently in the appendix to *la Mottraye*'s travels, who ſays, he had it from his friend, the author, in the month of *May* or *June* 1712. See vol. II. p. 115. of the *Hague* edit. in *folio*. In the *Acta Eruditorum* of *Leipſick*, of the month of *Auguſt* 1714, there is an extract of the hiſtory of Inoculation, by the ſame *Timoni*,

James Pylarini, another *Greek* phyſician, who had likewiſe been an eye-witneſs to the *Theſſalian* woman's performing the operation at *Conſtantinople* from the year 1701, and had only yielded to the evidence of facts, after having long refuſed to approve of the practice, publiſhed the particulars of it in a pamphlet printed at *Venice*, [h] *anno* 1715, with the approbation and atteſtation of the inquiſitor. This woman affirmed, that ſhe had inoculated no leſs than ſix thouſand [i] perſons in the year 1713. Among theſe were moſt of the children of the *Engliſh*, *Dutch*, and *French* merchants [k] ſettled

moni, which is there ſuppoſed to have been lately printed at *Conſtantinople*. See likewiſe *Ephemerid. Naturæ curioſorum, Norimb.* 1717, *Cent. V. Obſ. II.* communicated by the king of *Sweden*'s firſt phyſician.

[h] *Nova et tuta variolas excitandi per tranſplantationem methodus. Venetiis*, 1715, reprinted with the former at *Leyden*, 1721, and entitled, *Tractatus bini de novâ variolas per tranſplantationem excitandi methodo.*

[i] Butini, *Traité de l'Inoc.* p. 87.

[k] It has been aſſerted upon too ſlight a foundation, that the *Turks* adopted this method, and that *every baſhaw in* Conſtantinople *had his children inoculated at the ſame time that they were weaned.* The *Theſſalian* woman performed her operation only upon *Greeks*, *Armenians*, or other Chriſtians, either ſubjects of the Grand Segnior, or born in *Turkey*. *Pylarini*, poſitively declares, in his diſſerta-

ſettled at *Conſtantinople*, or rather in the ſuburbs of *Pera*, whom I have ſeen during my reſidence there in 1732, very thankful for having undergone this operation, and being ſecured, they and their children, from the danger and fatal conſequences of the ſmall-pox, and from the marks it uſually leaves behind it. *Anthony le Duc* was one of them; he took his degree of doctor of phyſic at *Leyden*, *anno* 1732, and on that occaſion publickly defended a theſis in favour of the *Turkiſh* Inoculation[1].

We were long ago informed by the greateſt writer of the age*, that lady *Mary Wortley Montagu*, wife to the *Britiſh* ambaſſador at *Conſtantinople*, being convinced of the advantages of this method, had reſolution enough, about the year 1717, to have her only Son, then ſix years old, inoculated in that city by her Surgeon; and that, after her return to *England*, ſhe cauſed her

tion on Inoculation, that the *Turks*, from being too much attach'd to the doctrine of fatality, had not yet adopted this practice in 1715. *Soli Turcæ utpote fati decretis addicti minuſque dociles hanc neglexerunt huc uſque.*

[1] *Diſſert. de Byzantinâ variol. inſitione. Ludg. Bat.* 1722.

* My author means Mr. DE VOLTAIRE. See *Lettres ſur les Anglois.*

her daughter to undergo the ſame operation. This example was followed among the people of quality. Soon after, at the requeſt of the Royal College of Phyſicians in *London*, the experiment was made upon ſix malefactors, [m] who by this means redeemed their lives which they had forfeited to the law. The late queen of *England*, then princeſs of *Wales*, [n] inoculated her family under the direction of Sir *Hans Sloane* †. This brought the method into vogue and repute. However, this example, which any where elſe, would at once have ſettled and ſpread a practice ſo conducive to the good of mankind, rather obſtructed its progreſs in a divided country, where reaſon, though ſupported by experience, is no ſooner adopted by one party, but it is thwarted by the other. While the moſt eminent phyſicians in *England*, viz. *Sloane*, [o] *Freind*,

[m] See Dr. *Jurin*'s account.

[n] *Lettre de Mr. de la* Coſte *à Mr.* Dodard, p. 39. Pref. to Dr. *Jurin*'s work on Inoculation.

† The late prince of *Wales* was inoculated at *Hanover* by Mr. *Maitland*. The preſent prince had the diſorder naturally. Prince *Edward* and Lady *Auguſta* were inoculated from him. Three more of the ſame illuſtrious family underwent the operation laſt year, and all with the ſame ſucceſs.

[o] The ſame *letter of Mr.* de la Coſte *to Mr.* Dodard.

Arbuthnot, *Jurin*, *Mead*, *&c.* favoured the new practice, and wrote in its defence, and Dr. *Shadwell* tried it on his own children, two phyſicians but little known, together with an apothecary[p], endeavour'd to raiſe their own reputation by running it down, and at the ſame time that the biſhop of *Sarum*, with many of the clergy inoculated their own families[q], other divines pretended that this operation did actually draw down the vengeance of heaven upon the nation. To prove their aſſertion, they alledged the proportionably greater numbers, who at that very time were carried off by the ſmall-pox in the natural way, and one of them, in a ſermon preached in *London*, affirmed, that the devil himſelf had given *Job* the ſmall-pox by this infernal invention[r].

It was nevertheleſs certain, that, beſides the trials made at *Conſtantinople*, where in one year 10,000 perſons of all ranks had been inoculated with great ſucceſs,[s] vaſt numbers had, with the like ſucceſs, undergone the ſame operation in *England*. Dr. *Jurin*, ſecretary to the *Royal Society*, publiſhed in 1724, a particular account of the experiments

[p] Dr. *Blackmore*, Dr. *Wagſtaff*, and Mr. *Maſſey*.

[q] *Letter of Mr.* Amyand *in Mr.* de la Coſte's *letter*, p. 69. [r] Ibid. p. 51. [s] Ibid. p. 68.

experiments made in *Great Britain*, together with ſome letters by way of ſupplement and proof. It follows from his computations, confirm'd by thoſe made ſince, both at *London* and in the country, where the diſeaſe is thought leſs dangerous, that there died commonly one in ſeven, in ſix, nay even in five, of thoſe who were ſeized with the natural ſmall-pox [t], and that out of ninety-one inoculated, ſcarce one died, and of the few who did, it could not be well proved that this misfortune was the effect of the operation. Yet at that time the Method itſelf was not brought to its preſent perfection, as, at firſt, many experiments were tried upon infirm and ill prepared ſubjects. Theſe were the diſadvantages of the method as it was practiſed at *Boſton* in *New-England*, where out of 300 patients inoculated, without diſtinction or ſufficient care, and at a time when the diſtemper was epidemical and the heats violent, five died, or one in ſixty [u], though it is not even certain that they died of Inoculation. It was however aſſerted, that one out of 49 was loſt, and the fatal lot having fallen upon ſome families

[t] Dr. *Jurin's Account*, Lond. edit. 1723, and *French* tranſlation by Mr. *Noguez*,

[u] Account of Inoculat. by *Jurin*, p. 19.

families of diſtinction*, this gave weight to the clamours of prejudice. The civil magiſtrate interfered, it was made a party affair, and the operation was laid under reſtraints little leſs than a prohibition. It was given out, though never proved by one ſingle inſtance, that the artificial method did not ſecure from the natural diſeaſe. The wiſeſt and cooleſt heads therefore concluded, that it was prudent to wait for ſuch light as time and a longer experience would afford.

France had been made acquainted with the firſt ſucceſs of the new method, in a letter of Dr. *la Coſte* to Dr. *Dodard*, firſt phyſician to his moſt chriſtian Majeſty. This letter was publiſhed at *Paris* in the year 1723, with licence, and with the approbation of Dr. *Burette* of the faculty of *Paris*. It is ſaid in that piece, that nine of the principal doctors of the *Sorbonne*, were conſulted, and that the author had at laſt the ſatisfaction to ſee them agree in this concluſion, *that for the benefit of the public it was lawful to make trials of this Method*. It is alſo affirmed in it, that Dr. *Dodard*, and many of our moſt celebrated phyſicians, ſuch as the late Dr. *Chirac*, who ſucceeded Dr.

* See Dr. *Kirkpatrick*'s Analyſis of Inoculation. *Lond.* 1754, p. 109.

Dr. *Dodard* as firſt phyſician to the king, and Dr. *Helvetius*[x], firſt phyſician to the queen, both members of this academy, approved of the method. To our ſame work was ſubjoin'd, an extract of a letter of Dr. *Aſtruc*, then profeſſor at *Montpellier*, and now of the Royal College, and conſulting phyſician to his Majeſty, wherein this learned Gentleman declared that, *he did not think there could be any danger in the operation, and ſeem'd very deſirous that it might be introduced at* Paris.

About the month of *July* 1724, [y] Dr. *Noguez* of *Paris*, obliged the world with a tranſlation of Dr. *Jurin*'s book, to which he prefixed an apology in favour of Inoculation. The whole was well received by the public; but the method had the year before met with a conſiderable check.

The

[x] Dr. *Helvetius*, ſays Dr. *de la Coſte*, in his letter to Dr. *Dodard*, p. 54. *did me the honour to write to me, that he thought this method very uſeful and beneficial to the ſtate, and that he ſhould be obliged to me for naming him as one who earneſtly wiſhes experiments may be made, and is perſuaded they will be ſucceſsful.* I know ſeveral diſtinguiſh'd phyſicians who are of the ſame opinion, *viz.* Dr. *Falconet*, Dr. *Vernage*, *&c.*

[y] The approbation to the book bears date the 3d of *July* 1724, but it was not publiſh'd before 1725.

The bad ſucceſs at *Boſton*, during the ſummer of the year 1723, had been exaggerated, and the number of thoſe who died the ſame year of the natural diſtemper, then violently raging in *London*, was falſely charged upon Inoculation [a]. This weakened the confidence people began to have in this operation. The like rumours were propagated at *Paris* juſt as they were about making experiments, which, after the ſucceſs they had been attended with in *England*, and chiefly in the Royal Family, it was high time to make, at leaſt, in the hoſpitals. They would have been encouraged by a prince [a] the protector of learning, of arts and ſciences, which he loved and cultivated; but no ſooner were his eyes cloſed, than a theſis was maintained in the phyſic ſchools [b], which ſounded the alarm againſt Inoculators. The operation was called criminal, thoſe who performed it impoſtors and executioners, and the patients dupes.

The

[a] An account, *&c.* by Dr. *Jurin*, p. 30. *Lond.* 1724. Tranſlat. of Dr. *Noguez*, p. 63.

[a] The duke of *Orleans*, regent of *France*, who died *Dec.* 3, 1723.

[b] *An variolas inoculare nefas?* Queſtio Medica; in Scholis Medicorum, 30 *Dec.* 1723.

The ſtrongeſt marks of prejudice, and paſſion appear in this work. It is a declamation equally violent and unſupported by proofs, and plainly intended to intereſt morality and religion againſt this new method. No phyſician of the faculty of *Paris* had openly declared in favour of Inoculation, and conſequently none was perſonally concern'd in the ſupport of it. Facts and accurate informations were wanting to oppoſe to the new objections. Dr. *Jurin*'s book was not then publiſhed; and the fear of making themſelves anſwerable for any bad accident, undoubtedly prevented our moſt eminent phyſicians from attempting to ſtem the torrent. Nine doctors of the *Sorbonne*, as I have already obſerved, had, after mature examination, decided in favour of the trials; and the approbation given by an Inquiſitor to *Pylarini*'s book ſeem'd alone ſufficient to ſatisfy the moſt ſcrupulous. But with ſome people, any remedy coming from *Turkey*, and well received in a proteſtant country, does not ſo much as deſerve an examination. Be that as it will, the too common prejudice againſt whatever is ſingular and new, got the better of reaſon.

Soon after, the celebrated *Hecquet*, that moſt declared enemy to novelties in phyſic, publiſhed an anonymous book, in which nothing appears moderate but the title, *viz. Doubts about Inoculation.* It is well known to what exceſs this, otherwiſe reſpectable, man carried his prejudice and obſtinacy. I have not, I muſt own, been able to go through the whole diſſertation. Let thoſe blame me who have attempted it as well as myſelf. We are not to wonder that the Inoculation of a diſtemper in a human body, ſhould appear criminal to him, who ſeems not to think the practice of it on trees altogether warrantable. His chief arguments againſt it are theſe: "Its antiquity is not "ſufficiently aſcertained; the operation reſts "upon falſe facts; it is unjuſt, void of art, "deſtitute of rules; it doth not carry off "the variolous matter; it has a double "ſtamp of *reprobation*; it runs counter to "the Creator's views; it doth not pre-"vent the natural ſmall-pox; it is contrary "to the laws; it bears no likeneſs to phyſic, "and ſavours ſtrongly of magic *."* This is a ſpecimen of the book, and of the reaſoning of our moſt learned and celebrated anti-inoculator. The approbation of Dr. *Burette*, the

* *Raiſons de doutes contre l' Inoculation.*

the royal cenſor, deſerves notice; he declares the work, with the obſervations it contains, *to be perfectly conſonant to the ancient medical practice.*

The concurrence of ſo many unfavourable circumſtances occaſioned Inoculation to be in a manner univerſally forgot, till the year 1738 [d]. From that time the hiſtory of this method has been almoſt unknown in *France*; the publick news-papers, and all our literary journals, have for theſe thirty years paſt been ſilent on this head; and I am daily ſurprized to ſee perſons who are far from being ignorant in other reſpects, ſo perfectly unacquainted with the preſent ſtate of Inoculation, that their lateſt accounts of it are thoſe unjuſt rumours ſpread in the years 1724 and 1725. Some have I heard ſay, with that eaſy careleſs manner of people unacquainted with facts, that this practice is now diſcarded in *England*; whereas nothing is more certain, than that it is there in greater vogue than ever. This is not the only inſtance that ſhews how little we generally are informed at *Paris* of the moſt uſeful diſcoveries that are made abroad, tending to the improvement of ſcience, and the good of mankind. What I have farther to offer

[d] *Kirkpatrick's* Analyſis.

concerning the hiſtory of Inoculation, cannot therefore but appear new to moſt of us.

While this practice ſeemed to loſe ground in *Europe*, it ſpread in *Aſia*; the epidemical diſeaſe of 1723, which cruelly infeſted both *Europe* and *America*, probably went round the globe; and this is not the only example of a ſimilar progreſs[e]. The *Tartars*, among whom the ſmall-pox is no common diſtemper, were infected with it, and it proved fatal to moſt of their adults. Father d'*Entrecolle*, a Jeſuit miſſionary at *Pekin*, relates[f] that in the year 1724, the emperor of *China* ſent phyſicians from his own palace into *Tartary*, to *ſow* the artificial ſmall-pox. This is the name the *Chineſe* give to their method, of which we intend to ſay ſomething hereafter. The ſucceſs, no doubt, anſwered their expectations, ſince they returned home with great numbers of horſes and ſkins, the only money of the *Tartars*.

On the other hand, the practice of *European* Inoculation was improved during the time of its diſgrace; its progreſs was leſs known, but it ſtill extended itſelf in both parts of the world.

I

[e] See *Journ. Hiſt. du Voyage à l'Equateur*, Paris 1751, p. 103 & 104.

[f] *Lett. edifiant. et curieuſ.* Tom. XV.

I have elſewhere mentioned[s] in what manner a Carmelite miſſionary, near the *Portugueſe* colony of *Para* in South *America*, ſeeing, in the year 1728 or 1729, the Indians of his miſſion carried off, one after another, by an epidemical ſmall-pox, without any one's eſcaping; and having already loſt one half of his flock, ſaved the remainder by venturing to perform upon them the method of Inoculation, of which he had got but a very ſuperficial knowledge by one of the news-papers of *Europe*; and that his example was followed, with the ſame ſucceſs, both by one of his fellow miſſionaries on the banks of *Rio-negro*, and by ſome *Portugueſe* inhabitants of *Para*. I have ſince heard, that on a like epidemical ſmall-pox breaking out in 1750, and ravaging that province, the artificial inſertion was attended with the ſame ſucceſs.

But Inoculation had for ſeveral years before got the better of prejudice in *New-England*. A dreadful epidemical ſmall-pox raged in *Carolina* in 1738; every one of the patients died. The inhabitants then began to call to mind the uſefulneſs of the remedy which they had formerly condemned; recourſe

[s] *Account of a Voyage to the River of the* Amazons, Paris 1745. *Mem. of the Acad. of Scienc.* 1745.

courſe was had again to Inoculation, which proved more ſucceſsful than ever, ſince during the heats of the months of *June*, *July*, and *Auguſt*, the moſt fatal to inflammatory diſorders, and in a country where Inoculation never ſucceeded ſo well as in *Europe*; of 1000 perſons inoculated, eight only died, or one in 125[h].

This late ſucceſs of Inoculation in *Carolina* during the year 1738, does not however come up to what it was attended with, when it was reſumed in *England*; of near 2000 that have been inoculated in a period of twelve years at *Wincheſter*, and in the counties of *Suſſex* and *Hants*, &c. Dr. *Langriſh* ſays there died only two breeding women, whom the phyſicians would have diſſuaded from the operation[i].

In the year 1746, a new hoſpital was erected in *London*, intended as well for inoculating the poor, and leſſening by that means the numbers that are daily ſwept away by the ſmall-pox, as for the benefit of thoſe who have it in the natural way. On this occaſion the biſhop of *Worceſter* preached a charity ſermon in 1752 in favour of the operation, which twenty years before had been called, in the ſame pulpit, a work of the devil.

[h] *Analyſis of Inoculation*, p. 110, 111, &c. [i] *Ibid.*

devil. His lordſhip mentions ſeveral experiments, and ſays, that of 1500 perſons inoculated by three different practitioners, three only died, as did the like number out of 309, moſtly adults, that underwent the operation in the new hoſpital. Mr. *Wiſcheſter*, ſurgeon to the Foundling-hoſpital, loſt but one of 186 inoculated children; of 370 caſes in his private practice, only one was unſucceſsful; and Mr. *Frewin* of *Rye* declares, that having inoculated upwards of 300 people, he had had but one miſcarriage. At *Saliſbury*, four died of 422; and at *Blandford*, three of 309.

In the month of *November* 1747, Mr. *Ranby*, his *Britannick* Majeſty's principal ſergeant ſurgeon, had inoculated 827[i] perſons without loſing one. The number amounted in 1752 to upwards of one thouſand, and ſtill not a ſingle miſcarriage[k]. The difference of the ſucceſs may be imputed to the various degrees of malignity in the reigning diſtemper, which muſt affect more or leſs the matter made uſe of for Inoculation; to the ſeveral methods of preparing and treating

[i] This fact was communicated to the author in a private letter from Mr. *Trembley*.

[k] See the biſhop of *Worceſter*'s ſermon. In 1754, Mr. *Ranby* had not had one ſingle *miſcarriage* in 1200 caſes; and Mr. *Middleton* but one in 800.

ing the patients; to the different degrees of skill and experience in the inoculators; but principally to the obſervance or neglect of the maxim, not to venture Inoculation upon ſubjects ill-diſpoſed, unhealthy or ſuſpected of having other diſorders. This laſt caution the *Grecian* woman at *Conſtantinople* is ſaid to have ſcrupulouſly obſerved, and to this ſhe attributed her ſucceſs.

In ſumming up all the foregoing facts, it appears, that out of 6398 perſons inoculated in *England*, but 17 are ſuſpected to have died of the conſequences of the operation, which is only one in 376 *.

In the year 1750, the example of one of the principal magiſtrates introduced the practice of Inoculation into a commonwealth, where manners and arts are equally improved, and where zeal for the public good is a virtue

* I acquainted the ingenious author with a miſtake he had made in the former calculations. He owned it, and gave me leave to make what alterations I might think proper. I choſe however to leave the numbers as they ſtood in my friend's original, upon his obſerving to me, that ſince the publiſhing of his diſcourſe, ſo many new trials have been made, and all favourable to the method, that there is no need to alter any thing in the concluſions. But I can't help thinking Mr. *la Condamine*'s proportion full large; and I am inclined, after a mature examination of all the facts that are come to my knowledge, to reduce it to that of one in a hundred.

virtue common to all the citizens. No fatal accident has hitherto made them repent taking this ſtep, as may be ſeen by a ſuccinct and accurate treatiſe on the artificial ſmall-pox, of which I have ſeen no account in any of our literary journals. The author is Dr. *Butini*, doctor of phyſic of the faculty of *Montpellier*, and received at *Geneva*. I have borrowed many obſervations and facts from it, as alſo from Mr. *Guyot*'s memoir inſerted in the ſecond volume of the *memoirs of the royal academy of ſurgery*, and from a letter of this laſt mentioned gentleman, which was communicated to me.

Dr. *Kirkpatrick* has juſt now (in 1754) publiſhed at *London* a new *Analyſis of Inoculation*. In this treatiſe, which is dedicated to his Majeſty the King of *Great-Britain*, the author recapitulates all that has been wrote in *England* for and againſt the method. He adds his own remarks on the ſubject, and anſwers all the objections. I have already mentioned ſeveral of his obſervations.

I am juſt now informed that Inoculation is actually gaining ground apace in *Holland*, and that Dr. *Tronchin*, a gentleman of *Geneva*, and a celebrated phyſician at *Amſterdam*, practiſes it with ſuch ſucceſs, that were

it not for popular prejudice, not yet ſufficiently ſubdued, it would lately have been countenanced by the moſt illuſtrious examples *.

Such have been, in the courſe of thirty years, the various viciſſitudes of the famous method of Inoculation. Emetics and the bark underwent no leſs oppoſition, before their uſefulneſs was generally acknowledged.

But before we proceed, it will be proper to give a diſtinct notion of the method, and of the different ways of practiſing it, to thoſe who are but imperfectly acquainted with it. This is indeed an eſſential part of its hiſtory.

The artificial ſmall-pox is probably more ancient in *China* than any where elſe. Father d'*Entrecolles*, in his very curious letter [1] dated from *Peking* the 11th of *May*, 1726, obſerves, that if that method had been brought into *China* from *Circaſſia*, or from any of the neighbouring countries, it would probably have ſpread firſt in the weſtern parts, which are

* The author certainly means the family of the Stadtholder. By ſome informations I have been favoured with from the learned profeſſor *Schwenke* at the *Hague*, I find that this gentleman was equally induſtrious and ſucceſsful, laſt autumn, in his practice of Inoculation, upon ſeveral perſons of the firſt diſtinction in that town, and that he was engaged this ſpring to perform the ſame operation upon many more.

[1] *Lett. edif. et cur.* Tom. XX.

are neareſt to the *Caſpian* ſea; whereas it is in the province of *Kiangnan* on the *Japan* ſea, the oppoſite extremity of the empire towards the Eaſt, that the method of *Tchang-teou*, or of *ſowing the ſmall-pox*, was moſt antiently known. It conſiſts in conveying up the noſtrils of children a pellet of cotton impregnated with the powder of the dried matter of variolous puſtules. This method was tried in *England* on a girl condemned to death [m]. She ſuffered more than the other malefactors who were inoculated in the uſual way; and the *Chineſe* practice, for which Father d'*Entrecolles* gives three different receipts, was judged to be dangerous [n].

In *Greece*, as well as in *Turkey*, they applied the matter, ſtill warm and oozing from puſtules of a natural and ſafe ſort, to eight or ten punctures made in different parts of the body. The operation was accompanied with many ſuperſtitious ceremonies, and with the oblation of wax tapers. Dr. *Timoni* ſuſpects that by means of theſe the *Greek* inoculating woman ingratiated herſelf with the clergy, who ſupplied her with a prodigious number of ſubjects to inoculate [o].

[m] *Butini, Traité de l'Inoculation*, p. 98. [n] *Ibid.* p. 86.

[o] *Quin et ſorte tributo cereorum clerum ſibi conciliat. innumeros enim quos inoculet eoſque commendatos ab ipſis ſacer-*

Much leſs preparation was uſed in *Wales*; ſchool-boys there would give themſelves the ſmall-pox by pricking one another with a needle dipt in the matter, or merely by rubbing their arms or hands, till the blood came out, againſt the variolous puſtules that were beginning to dry off[p]. One lad uſed to purchaſe the infection of another for the value of two or three pence; and this cuſtom went by no other name in that country but that of *buying the ſmall-pox*. In *England* experience has procured the preference to the following method, practiſed long ago by Mr. *Ranby*, and ſince followed at *Geneva* with the greateſt ſucceſs, both upon children and grown people to the age of thirty[q].

[r] The patient is prepared for a few days by a proper diet, and ſuitable medicines, one or two gentle doſes of phyſic, and, if needful, by a bleeding; after which an inciſion an inch long is made in both arms, in the middle and external part under the tendon of the deltoid muſcle. This inciſion barely divides

ſacerdotibus Græcis quotidie habet, ita ut vix poſſit multitudini ſuffiecere. Diſſert. hiſt. du Doct. Timone. See *Appendix des Voyages de la Mottraye*, Tom. II.

[p] See the letters collected by Dr. *Jurin*.

[q] Mem. of Mr. *Guyot* in *Mem. de l' Acad. de Chir.* Vol. II.

[r] Mr. *Ranby*'s *Latin Letter*. *Butini, Traité de l' Inoculation*.

divides the ſkin, and leaves the motions of the arm intirely free[1]. Then they put in a thread of the ſame length, impregnated with the matter of a ripe puſtule without any redneſs at the baſis, and taken from a healthy child with a good kind, either natural or artificial. It has been found that this matter preſerves its efficacy for many months, from Autumn till Spring. The pledget is removed after forty hours, and the wounds are dreſſed once a day. Though the patient finds himſelf able to go out the firſt days after the operation, yet he is confined to his room and to his diet. The ſixth or ſeventh day, when the fever comes on, he is put to-bed. This fever is ſeldom attended with any accident, and all the ſymptoms ceaſe at the time of the eruption on the ſeventh or eighth day, and are of no conſequence. Then the inflammation of the cuticular inciſions begins to abate, the wounds diſcharge more matter, and a great part of the venom goes off that way. The tenth day after the eruption the wounds begin to incarn, the fifteenth they cicatriſe, and they are uſually healed by the twentieth; but if they hold out longer, they

[1] Dr. *Timoni* had already ſubſtituted the inciſions in both arms to the punctures which the *Greek* woman made in ſeveral parts of the body. See his Letter, *Append. des Voyag. de la Mottraye.*

they muſt not be healed up too faſt. One inciſion has been thought ſufficient; and the reaſon that two are made, is not ſo much from any doubt of the inſertion having taken effect, as to procure by the means of two outlets an eaſier diſcharge of the variolous matter; to leſſen the acrimony and corroſiveneſs of that which fills the puſtules, and to render the nature of the ſmall-pox kinder. Theory in all this agrees perfectly well with practice.

Sometimes all, or almoſt all, the venom runs off through the two openings; the patient then has but one or two puſtules, and ſometimes not one. He is however not the leſs clear of the ſeeds of the ſmall-pox, nor the leſs ſafe from a freſh infection. The greater the diſcharge is from the wounds of the arms, the fewer and more diſtinct are the puſtules. In the natural ſmall-pox, each particle makes an abſceſs; by which means the diſtemper often grows confluent, and of courſe more dangerous. Among all the caſes of Inoculation at *Geneva* *, there is hardly

* In a letter which I received from Dr. *Butini*, dated *Geneva* the 8th of *November* laſt; this learned gentleman mentions, that he has ſometimes, tho' ſeldom, obſerved the ſecondary fever in ſome caſes of Inoculation, but that it always was ſlighter than in the natural diſorder,

hardly one of this ſort, and none of the patients have been pitted. The ſame was found true not only in *England*, but in *Greece* and *Circaſſia*[t], where the inhabitants are ſaid to have adopted the practice to preſerve the beauty of their daughters. This obſervation admits hardly of any exception, unleſs when the patients ſcratch themſelves, or have been ill prepared.

The greateſt danger of the ſmall-pox in the natural way, is the ſecond fever which comes on at the time of the ſuppuration. In the artificial ſmall-pox, this fever happens very rarely, eſpecially among children, who are hardly ever ſick. Of twenty perſons inoculated at *Geneva* by Mr. *Guyot*, the only one who had this fever, was a woman who had had ſeveral children[u].

I have dwelt the longer upon the hiſtorical part of Inoculation, as the narrative of facts is ſufficient to obviate moſt of the objections I am now going to conſider.

PART

der, and never attended with any accident. He adds, that the method gains every day more ground at *Geneva* and at *Lauſane*; and that out of eighty-five perſons inoculated in theſe two places, not one has died, nor even been in danger of dying. The original of this letter is inſerted in the *Journ. Britan.* for Jan. and Feb. 1755.

[t] *Timoni*, *Pylarini*, *Jurin*, *La Coſte*, &c. See *Mottraye's* Voyag.

[u] See *Mem. de l'Acad. de Chirurgie*, Vol. II.

PART II.

OBJECTIONS ANSWERED.

THESE objections, however weak they be, we muſt not diſdain to anſwer, ſince it is only by a ſolid confutation of them that we can acquire any right to treat them with contempt.

Can it be ſeriouſly aſked, whether it is a crime to ſave the lives of millions, becauſe it is poſſible that two or three out of each thouſand could not be preſerved? To this problem may be reduced the theſis publiſhed in 1723*, wherein the phyſician aſſuming the province of the divine, pronounced Inoculation to be unlawful, by the ſame right that the divine might have had to declare it unwholſome.

Objection I. *Is it the genuine ſmall-pox that is convey'd by Inoculation, or is it not a diſtemper more dangerous than that you would avoid?*

Anſwer. The firſt part of this objection has been anſwered by thoſe who ſtarted it, not without evident marks of their want of candour. They are willing to grant that the

* *An variolas inoculare neſas?*

the artificial ſmall-pox is the true diſtemper [x], provided you will allow that it is more malignant and contagious than the natural. The objection, thus ſtated, we have already ſufficiently anſwered, by ſhewing both from reaſon and facts, that an infection deſignedly communicated, with all the preparations and cautions taught by art and practice, with a proper choice of age and diſpoſition of body and mind, time and place, and of the variolous matter; that ſuch a ſmall-pox cannot fail of being, as it actually is, kinder, and of courſe leſs dangerous than an epidemical diſtemper catched by chance, and under circumſtances that may increaſe the danger. Is it conceivable that the matter for Inoculation, choſen from the beſt ſort, can produce worſe conſequences than that which deſtroys the ſeventh, the fifth, the fourth, nay ſometimes the third part [y] of thoſe who have it in the natural way? Was not the contrary evident, even in leſs ſucceſsful trials, ſince our adverſaries have owned, that even at thoſe times when the ſmall-pox was moſt fatally epidemical, Inoculation did not carry off more than one in fifty [z], whereas the natural di-

 ſtemper

[x] Kirkpatrick's *Analyſis*, &c. p. 100. [y] *See* Maitland's *Letter in that of Dr.* La Coſte. [z] Jurin's *Account*.

ſtemper would have deſtroyed at leaſt one in five?

Objection II. *Does Inoculation prevent the natural infection?*

Anſwer. Facts are the beſt anſwer to this objection. For theſe thirty years paſt, the effects of Inoculation have been attentively obſerved; all the caſes have been carefully diſcuſſed, and not one example, properly atteſted, has been produced of an inoculated perſon catching the ſmall-pox a ſecond time[a]. This truth the enemies of the practice have, by all means, even by thoſe of impoſture, endeavoured to render doubtful[b]. Dr. *Nettleton* was obliged publickly to contradict a rumour falſely ſpread of a patient, inoculated by him, having had afterwards the natural diſtemper, and been very ill of it. A like ſtory was again propagated, and a letter of one *Jones* produced, who affirmed the ſame thing to have happened to his ſon. But upon Dr. *Jurin*'s enquiring ſtrictly into the matter of fact, the father refuſed to let him ſee his ſon's ſcars; he afterwards offered to diſcover the whole truth for a ſum of money; and at laſt he confeſſed, in a letter to the doctor, that he did not ſo much as know what

[a] Timoni, Pylarini, Jurin. *Letters of* Richard Wright *and* Perrot Williams. [b] Kirkpatrick, p. 121.

what Inoculation meant. Dr. *Kirkpatrick* has inſerted this letter in his work*.

After all this, it would be of little importance to enquire, whether a perſon may have the natural and true ſmall-pox twice. Suppoſing even this to be true, which yet is contradicted by many phyſicians, it would not neceſſarily follow, that there is the ſame danger of a relapſe after Inoculation: For though it may be conceived, that in ſome particular caſes the natural infection does but imperfectly unfold the variolous ſtamina, ſo that there may ſtill remain a ſufficient quantity for a ſecond fermentation, yet it may be affirmed, with great probability, that the variolous ferment being ſet a working by one of the ſame kind, directly conveyed into the blood by means of ſeveral incifions, is ſo thoroughly ſubdued, that a ſecond fermentation cannot enſue; a greater cauſe muſt produce a greater effect; milk does not coagulate ſo ſoon, and ſo effectually, by the natural power of the air and heat, as by the immediate mixture of an acid: And in the like manner the artificial ſmall-pox may exhauſt the ſtamen more effectually than the natural. But ſetting aſide all thoſe arguments which may poſſibly be controverted,

* *Kirkpatrick*, p. 123.

it is ſufficient for removing all fears of a ſecond infection after Inoculation, that for theſe thirty years and more, ſince the operation has been practiſed in *England*, not one inſtance can be produced of a perſon once inoculated, ever catching the ſmall-pox again, either by contagion, or Inoculation.

Inoculated children have been frequently ſuffered to keep company with others that had the natural diſeaſe, without ever catching it again[d].

Elizabeth Harris[e], one of the ſix criminals on whom the experiment was firſt made, after her recovery, nurſed more than twenty perſons under the ſmall-pox, and yet ſuffered nothing from the infection.

They likewiſe tried to inoculate another priſoner, who had had the ſmall-pox in the natural way, but without any effect, though they made uſe of a greater quantity than uſual of the variolous matter[f].

The operation has been repeated more than once upon ſeveral ſubjects, but always without effect *.

Dr.

[d] *Kirkpatrick*, p. 120. [e] Ibid. [f] Ibid. p. 119.

* I lately tried this experiment upon myſelf, and the event was the ſame, *viz.* the infection, though conveyed by means of two inciſions, had no effect upon my blood, as it had been ſufficiently defecated fifteen years before

Dr. *Kirkpatrick* [s] relates a remarkable ſtory of a young lady of twelve years of age, who after having been inoculated and quite recovered, had a fancy to try whether ſhe could catch the ſmall-pox again. She accordingly, unknown to the family, made a freſh inciſion, to which for three days ſucceſſively ſhe applied ſome matter which ſhe procured by means of a female friend, who probably was not very nice in the choice. About the eighth day ſhe felt a ſlight head-ach, which preſently alarmed her, and made her confeſs what ſhe had done. But after lying down a little in her cloaths, ſhe ſprung up, ſaying, *ſhe would not be ſick any longer*. Her head-ach went off, and ſhe had no fever, nor the leaſt eruption.

The honourable Mr. *John Yorke*, fourth ſon of the Lord High Chancellor of *Great-Britain*, being come to *London* from the univerſity at the age of twenty, it was thought proper to give him the ſmall-pox by Inoculation, to prevent his catching it in the natural way. Mr. Serjeant *Hawkins* performed the operation, which brought on,

before by the natural ſmall-pox. The particulars of this trial may be ſeen in the *Journal Britannique* for *Nov.* and *Dec.* 1754.

[s] *Kirkpatrick*, p. 120.

on, at the uſual time, the inflammation and ſuppuration of the wound, the ſwelling of the arm, the ſickneſs, fever, and all the ſymptoms of the ſmall-pox, but without any eruption. The want of this engaged Mr. *Yorke*, though he was aſſured that the operation had had its full effect, to have it repeated; but this repetition was intirely ineffectual, the wound healing up immediately as a mere ſcratch.

Objection III. *The ſmall portion of venom, which is conveyed into the blood by Inoculation, may ſerve as a vehicle to transfuſe the ſeeds of ſome other diſtemper at the ſame time, ſuch as the ſcurvy, king's-evil,* &c.

Anſwer. The danger here apprehended, is as great in the natural as the artificial ſmall-pox, and yet there is no inſtance of theſe diſtempers having been ever communicated by either; though if there were, Inoculation would ſtill have this advantage, that we are at liberty to make the infection as little dangerous as poſſible, by taking the matter from a healthy child, who has no diſtemper but the ſmall-pox.

Objection IV. *Inoculation will ſometimes leave bad remains, ſuch as ſores, tumors,* &c.

This

This objection hardly deſerves an anſwer. Such accidents are indeed but too common after the natural ſmall-pox, but extremely rare after Inoculation; and for one example which may be alledged, though even that ought to be imputed to the imprudence of the patient, or the unſkilfulneſs of the ſurgeon, we hear of many and more dangerous accidents occaſioned by mere letting of blood. The latter practice muſt therefore be proſcribed, before we proceed to baniſh Inoculation on this account.

Objection V. *The giving a diſtemper, or preventing it in one, who in the order of providence was deſtined to have it, is an uſurpation of God's right.*

Anſwer. This is the objection of Fataliſts and rigid Predeſtinarians. Does a reliance upon providence, imply that we are not to prevent thoſe evils which we foreſee, and which we have it in our power to guard againſt by prudent precautions? They who maintain this principle, muſt, if they act conſiſtently, prohibit preſervatives in general, and all remedies which tend to leſſen the malignancy of any diſtemper; they muſt follow the example of the *Turks*, who, under pretence of caſting themſelves on providence, periſh by thouſands of the plague,

ſo

ſo frequent in *Conſtantinople*, while they ſee the *Franks*, who are ſettled among them, preſerving themſelves from the fatal effects of the contagion, both in town and country, by ſhutting themſelves up in their houſes, and carefully avoiding all outward communication. I would aſk thoſe who in this caſe ſtand up for the rights of divine providence, whether, when our Maker permits the diſcovery of a ſure method for preſerving ourſelves from the devaſtations of the ſmall-pox, he forbids our making uſe of it? God offers us the remedy; is it not offending him to reject his gifts with diſdain? We now come to the moſt common and moſt illuſive objection.

Objection VI. *It is not lawful to give a cruel and dangerous diſtemper to one who perhaps would never have had it.*

Anſwer. Let us begin by ſtripping this objection of its fallacy and hyperbole.

Firſt, It cannot be truly ſaid that the inoculated ſmall-pox is either cruel or dangerous. An inciſion which hardly divides the ſkin, and may rather be called a ſcratch; a ſlight fever, attended with ſome few ſymptoms, which ſcarce laſt 24 hours, cannot ſure be called a cruel diſeaſe; nor can a diſtemper be called dangerous, which does

not carry off one in 300, as has been already proved, perhaps not one in a thouſand, as we ſhall ſhew hereafter [h].

If on the firſt trials made in *Europe*, and in *America*, before Inoculation was brought to perfection, ſometimes one patient died out of 64, as at *Boſton*, in an unfavourable ſeaſon, and by the neglect of the neceſſary preparations, according to Dr. *Jurin*; if it were true that ſometimes one in fifty has died; and

[h] What has been affirmed by the *Greek* phyſicians, *Timoni*, *Pylarini*; and *Le Duc*, concerning the prodigious ſucceſs of Inoculation in *Turkey*, might appear ſuſpicious, but it is now rendered credible by all the experiments ſince made in *England*, where the ſmall-pox is often dangerous, and the climate leſs favourable for Inoculation than that of *Conſtantinople*. — Theſe three *Greek* phyſicians, of different ages, and intereſts, and who have not cited each other in their writings, aſſure us ſeverally, that after many years enquiries, and repeated experiments which they were eye-witneſſes to, they never could find that any ill conſequences attended this operation. They were moreover perſons who deſerved the higheſt credit. *Pylarini*, a native of *Cephalonia*, of a noble family, was firſt phyſician to an emperor of *Ruſſia*: he diſtinguiſhed himſelf by his learning and by his writings: he proteſts, that for a long time he felt a reluctance to this practice, and only yielded to the evidence of facts. His diſſertation ſhews, that he was neither credulous, nor meanly verſed in phyſics. He had taken his degrees very young at the univerſity of *Padua*. See *Hom. Ill. du P. Niceron*. *Timoni* had likewiſe taken his degrees at *Padua* and *Oxford*: he

and granting, what on a careful examination of all the circumſtances[1] would be hard to prove, that they died of Inoculation, yet ſtill I affirm, that the very ſmall number of accidents it is charged with by its moſt inveterate enemies, is a demonſtrative proof that the operation itſelf cannot be dangerous: for what indeed is one unſucceſsful caſe to 49 that ſucceed? Beſides, it cannot be denied but that of theſe 50, eight or ten at leaſt would probably have died in the natural way, and that only one dies under Inoculation. And this is what they are pleaſed to call a diabolical operation.

I cannot forbear making an obſervation, which has, I think, eſcaped every one elſe who has wrote upon this ſubject, which is, that it is highly unjuſt, tho' uſual, to charge Inocu-

was fellow of the Royal Society, and refuſed to be the Grand Signior's phyſician: he had for ten years together attended the progreſs of this operation, and been greatly concerned in it. *Acta Eruditorum Lipſiæ, Feb.* 1722. *Anthony le Duc*, who appears by his name to have been of *French* extraction, was born at *Conſtantinople*, and had been inoculated there. He took his doctor's degree at *Leyden* in 1716, and held a theſis in that univerſity in favour of Inoculation. His diſſertation was printed at *Leyden* in 1722, together with thoſe of *James de Caſtro* and *Walter Harris*, both of the College of Phyſicians in *London*.

[1] See *A Letter written from* Boſton *to* Caleb Coteſworth, *and inſerted in Dr.* Jurin's *Account.*

Inoculation with having deſtroyed all thoſe who die within forty days after the operation. Is there any one man, ever ſo healthy and ſtrong, whoſe life can be depended upon for forty days? Of 800,000 inhabitants, according to the common computation in *Paris*, 20,000 die every year, and conſequently 2500 in ſix weeks, which is $\frac{1}{320}$. Therefore of 320 perſons taken at a venture, it is probable that one at leaſt will die within 40 days.

It follows that of 320 inoculated perſons of all ages, one is to die within that term, unleſs it be pretended that this operation leſſens the degree of probability of a natural death. But ſurely they who are driven to this ſuppoſition, are not aware of its abſurdity; ſince, if Inoculation ſecured a man's life for 40 days, a ſcratch repeated every ſix weeks would render him immortal.

Thus it appears that the inoculated ſmall-pox is neither dangerous nor cruel, as this objection ſuppoſes. *But*, it will be ſaid, *you cannot deny but it is a diſtemper; why then ſhould we deſignedly give it to one who perhaps would never have had it?* This is the moſt ſpecious argument that can be urged

againſt this practice, and yet the eaſieſt to confute.

I anſwer firſt, that this diſtemper is not given to one who would never have had it, ſince they only who are ſuſceptible of it, can catch it by Inoculation, as is evident from all the experiments that have been made to verify this fact[k]. He who has not in his conſtitution the ſeeds of the ſmall-pox, will come off with a ſlight operation, leſs painful than bleeding; the inciſions will dry up like a common cut, and he will be for ever delivered from thoſe continual and terrifying apprehenſions they live under, who have not had it[l]. This trial will warrant his being for ever proof againſt the infection; nay, it is the only way to ſatisfy thoſe who are not ſure they have had the genuine ſmall-pox, or who being in doubt whether they have had it in their infancy, ſpend all their days in ſuch a conſtant uneaſineſs, as makes their life a burden.

Secondly, I anſwer with that learned prelate, who publiſhed a ſermon in favour of Inoculation, that the ſmall-pox is a diſtemper

[k] *Jurin, Butini, Kirkpatrick.*

[l] I have received undoubted intelligence of the child of an *Engliſh* colonel ſettled at *St. Quentin* in *France*, upon whom Inoculation has been thrice performed, but always without effect.

per which may be ſaid to be general, and to which providence hath been pleaſed to ſubject the human ſpecies; and that the number of thoſe who attain to the natural period of human life without having it, is ſo very ſmall, as hardly to ſtand in exception to the common law; that it is with Inoculation as with a fit of the gout, which is purpoſely raiſed, when the particles of that painful diſorder lye ſcattered through the whole maſs of blood [m]. In both caſes we do not ſo properly give a diſtemper to a body that was free from the danger of it, as we chuſe the moſt favourable time to purge off the ferment that occaſions it, and which we carry in our blood. Now as this criſis is almoſt unavoidable, it becomes much more dan-

[m] *The aim of the previous method is this,* viz. *after due preparation, in a* known, *viſible manner, to raiſe that commotion in the blood, which ſends forth into the ſurface of the body the latent materials of this diſtemper ſo very dangerous, when excited in the common way by infectious particles unperceived. It ſeems therefore (like the raiſing a fit of the gout, when the particles of that painful malady are diſperſed through the whole maſs of blood) not ſo properly the giving a diſtemper to a human body intirely free from, and out of danger of that diſtemper, as chuſing the* ſafeſt *time and manner of cauſing a diſorder otherwiſe almoſt unavoidable in a way extremely more pernicious, the fuel thereof being lodged within us.* Biſhop of WORCESTER's Sermon, 7th Edit. p. 12, 13.

dangerous when it riſes of itſelf, and in a time of epidemical contagion, when it ſometimes appears with equivocal ſigns that diſguiſe it, and expoſe the patients to the danger that a miſtaken method of cure may occaſion.

The authority of a biſhop of the church of *England*, ought, in the preſent caſe, to loſe nothing of its weight with catholic divines; and the leſs ſo, as the doctrine of abſolute predeſtination, which though adopted by few, is ſtill retained in the articles of that church, is much fitter than the catholic tenets to furniſh ſpecious arguments againſt the practice of Inoculation.

From all the foregoing conſiderations, it appears that this laſt objection, which reſted upon ſeveral falſe ſuppoſitions, bears now quite another aſpect. Reduced to its real value, it amounts to this:

Is it lawful to ſecure any one, for life, from a violent and almoſt unavoidable diſeaſe, by making him contract, with the moſt prudent precautions, and under the care of a ſkilful phyſician, a ſlight diſorder, a hundred times leſs (if at all) dangerous? I aſk, in my turn, whether there be two ways of anſwering this queſtion?

But,

But, ſay they, *it is not lawful to do ever ſo ſmall an evil to produce the greateſt good.* This argument is founded on a miſtake. Suppoſe this principle is ſtrictly and generally true with regard to moral evil, it will by no means hold good when applied to phyſical evil. It is certainly lawful to pull down a houſe, in order to ſave a whole town from fire. This is a phyſical evil, which can hardly take place without ſome degree of moral evil. A whole province is laid under water, to prevent the tranſient devaſtations of an enemy; entrance is refuſed into an harbour to a ſinking veſſel when ſuſpected of infection. In a time of plague lines are drawn, and, though humanity ſhudders at the thought, orders are given, without ſcruple, to fire indifferently on all thoſe who offer to paſs them. Is therefore the ſmall phyſical, or, if you will, moral evil of Inoculation, to be compared with all theſe evils, which are tolerated, allowed of, authorized by all laws?

But the charge is ſtill renewed. *Who will ever perſuade a tender father, wilfully to give his only ſon a diſtemper which he may poſſibly die of? Be the danger ever ſo ſmall to which he expoſes him by Inoculation, were it but one in a hundred, nay in two or three hundred,*

hundred, that this operation is fatal to, as is ſuppoſed, ought he voluntarily to expoſe his ſon to this danger?

Yes, ſure, to ſave him from one infinitely greater. If prejudice does not totally extinguiſh the light of reaſon in the father, if he loves his ſon with a rational love, he cannot heſitate one moment.

This is not a queſtion in morality, it is a matter of calculation. Why ſhould we make a caſe of conſcience of a problem in arithmetick?

A father ought to avert the dangers his ſon is threatened with; and if he cannot totally preſerve him from them, he ought to leſſen the peril as much as poſſible. Upon this principle ought he, or ought he not, to inoculate his ſon? To decide this queſtion, you need only compare the hazards the child runs in both caſes.

I ſhall not enter into all the conſiderations that might help us to aſcertain the degree of probability that a new-born child may one day die of the ſmall-pox; this hazard is in a compound ratio of the probability that the child will have the diſtemper, and of the chance of his dying if ever he has it. Now beſides that we have not perhaps ſufficient experience to ſolve this problem exactly,

exactly, I only propoſe here to eſtabliſh, upon known calculations, ſuch truths as may ſtrike at firſt ſight any one who is no Mathematician.

The firſt obſervation that occurs is this; That if the ſmall-pox were unavoidable, the danger of dying of it would be almoſt equal for a child, who is but juſt born, and one who is actually ſeized with the diſtemper. Therefore if the number of thoſe who never have it is very ſmall, the ſlender hopes of eſcaping it does but very little leſſen the riſk which the new-born infant runs of dying of it one time or other.

But as children are not inoculated till after the age of two years, it only concerns us to enquire into the danger they are in after that age. The biſhop of *Worceſter* affirms in his ſermon as a matter of fact, confirmed both by experience and by calculation, that of thoſe who live to be men, there is ſcarce one in many hundreds who eſcapes the ſmall-pox [a].

Upon

[a] *The inſtances of thoſe who paſs through life after having arrived at manhood, and having been within the reach of infection, without undergoing this direful diſeaſe, are ſo extremely few, as ſcarce to form an exception; learned calculations have made it as one to many hundreds.* Biſhop of *Worceſter*'s *Sermon on Inoculation*, p. 10. Dr. *Jurin* found that, out of a hundred perſons inoculated,

Upon this ſuppoſition, a perſon of more than two years of age is nearly in the ſame danger of dying of the ſmall-pox, as if he actually laboured under the diſtemper. Now, ſince it appears by Dr. *Jurin*'s computations, that a ſeventh part of thoſe, who have the ſmall-pox, die of it, the riſk a child runs after the age of two years, is likewiſe in the proportion of one to ſix, or thereabouts, ſo at that age there is a probability of one ſeventh or at leaſt one eighth not only that he will have the ſmall-pox, but that he will die of it; that is, the odds for his life are no more than ſeven to one.

The ſame inference may be drawn from ſome obſervations of Dr. *Jurin*'s, which ſeem at firſt ſight to contradict the foregoing calculation; but as I would not interrupt the thread of this diſcourſe, I ſhall inſert it in a note [o], and come now to the queſtion propoſed.

It

the operation had no effect upon four. This might lead us to think, that in a hundred there would likewiſe be four, who would not have it in the natural way. But ſome abatement ought to be made in this number; becauſe it is poſſible, and even probable, that at leaſt one of thoſe upon whom Inoculation had no effect, had gone through the diſtemper in his infancy, and had ſince forgot it.

[o] It appears by the Bills of Mortality for forty-two years in and about *London*, and by a ſupplement of four

It is plain that a father ought not to expose his ſon to any, even the moſt diſtant danger, if he was ſure the child would never be liable to it; but as he is ſo far from having any revelation to this purpoſe, that he is on the contrary certain, that the chance againſt his ſon's life is as one in ſeven, it is no leſs evident, that his paternal love requires him to reſcue his ſon from that danger if he can. Though by inoculating him he ſhould only leſſen the danger by one half, or one third, or even by one quarter, or leſs, reaſon would prompt him to it; much more when by that means the riſk is reduced almoſt to nothing, ſince, according to the lateſt experiments, upon 300 Inoculations not one accident is found to happen.

years to the old bills, that ſome years an eighth part of the number are carried off by the ſmall-pox, and that upon an average this diſtemper ſweeps away the fourteenth part of mankind, or 72 out of a 1000, which ſeems to contradict what we have laid down in computing the hazard of dying of it at the rate of one to ſeven or eight. But we muſt take notice, that in the above liſts are included thoſe that die at all ages, and that of 1000 children born, 386 or more die under two years of age, and generally before they have had the ſmall-pox; ſo that it is out of the remaining 614 that we are to deduct the 72 that die of this diſtemper, which makes almoſt the eighth part, and comes very near to our firſt proportion. The two computations might be brought ſtill nearer by various conſiderations.

Inſtead of one child, let us ſuppoſe the father has ſeven, of two years old and upwards; if he leaves it to nature he muſt expect they will have the ſmall-pox one time or another, and he may loſe one of the ſeven, perhaps two if it proves a malignant ſort, and this, very likely, when they have compleated their education, and given him the greateſt hopes. If he inoculates them in their childhood, it is highly probable he will ſave them all. But ſtill it will be ſaid, perhaps Inoculation will deprive him of his favourite child, who might have eſcaped the natural ſmall-pox. This is really a frivolous fear, ſince the artificial diſtemper is infinitely ſafer than the natural, and experience has ſhewn, that whoever would not have catch'd it in one way will not take it in the other. But put it to the worſt; ſuppoſe, though againſt all probability, that the darling ſhould die, ſtill the father has done his duty in leſſening the danger as far as in him lay. He has many more reaſons to comfort himſelf for his loſs than he would have had if his daughter, after having been well ſettled, had died in childbed of her firſt child, as it is moſt likely her life would not have been endanger'd by letting her live ſingle. But all this will appear more obvious, and

the

the calculations more exact, upon a great than a ſmall number.

A planter has 350 young ſlaves, who have not yet had the ſmall-pox; if he lets them take their chance, in the ordinary courſe of things, the ſeventh part will die, ſo that he will loſe fifty; whereas if he inoculates them he will not loſe one, according to the lateſt calculations, which allow but one to 376. Now ought he or ought he not to inoculate them? It muſt be owned that, both by former and later experience, Inoculation has proved leſs ſucceſsful in *America*, chiefly among the Negroes, than in *Europe*, either from the nature of the climate or the ignorance of the inoculators; ſo that inſtead of one ſlave, poſſibly the maſter may loſe 10, 16, or 20; but, for the ſame reaſon, inſtead of 50 he might have loſt 100 or 150 by the natural ſmall-pox.

There is indeed the greateſt likelihood, that in the trials that have been made upon Negroe ſlaves, much leſs care has been taken for the preparing of them than for that of white free people, whoſe life is much more precious. Beſides, as moſt of the Negroes carry from their own country a venereal taint, the choice of ſubjects proper for the operation muſt be very difficult among them.

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It is of little importance whether or no there be any error in the numbers we have ſuppoſed, ſince the concluſion can vary but from more to leſs; but ſtill you ſee that there is no proportion between the riſks in both caſes, and that the advantage is manifeſtly on the ſide of Inoculation.

Let us endeavour to illuſtrate this important truth by ſhewing it in a new light.

You are obliged, we ſuppoſe, to croſs a deep and rapid river; the danger of being drowned is great, if you ſwim over. A by-ſtander offers you a boat; if you reply, you had better not go over at all, you miſtake the ſtate of the queſtion, for you are under a neceſſity of reaching the oppoſite ſhore. You have therefore no other choice but that of the means. This is the caſe of the ſmall-pox: it is common to all mankind with very few exceptions. Moſt of us muſt croſs the river. Long experience has ſhewn, that of ſeven who venture to ſwim over, one is carried down the ſtream, whereas not one in a hundred is loſt of thoſe who go over in the boat. Can you deliberate upon the choice?

Such is the fate of mankind. One third are born to die before they are two years old by incurable or unknown diſeaſes. They who

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paſs that age are ever after expoſed to the unavoidable danger of falling by the ſmall-pox. It is a lottery, wherein we find ourſelves engaged without our conſent. Every one has his ticket, and many every year muſt draw the blank of Death. Now what do we by Inoculating, but change the conditions of this lottery by reducing the number of blanks? One in ſeven, and in the beſt climates one in ten, was generally fatal; now but one in 300, one in 500, ſhortly it will be but one in 1000; even now we are not without inſtances of it. Future ages will envy us this diſcovery. Nature claimed her tithe; art aſks but her thouſandth.

What I have ſaid of a father with regard to his family, I may venture to ſay of a monarch with regard to the preſumptive heir of his crown. If the thing admitted of any doubt, nay if it was not ſelf-evident to an attentive mind, can we ſeriouſly perſuade ourſelves that the eldeſt ſon of a Prince of *Wales* would have been expoſed to the event of Inoculation?

PART III.

INFERENCES AND REFLECTIONS.

IN order to avoid long diſcuſſions, I have hitherto ſuppoſed that the practice of Inoculation was attended with ſome danger, and confined myſelf to prove that this is comparatively nothing. And indeed the danger of one in 500 or 1000 is no more but rather leſs than we daily expoſe ourſelves to, without any ſort of neceſſity. We hunt, we ride poſt, we play at cricket, at tennis, we go to ſea, we undertake long voyages, though we know the hazards we expoſe ourſelves to by ſo doing. Will you ſay it is lawful to make a practice of riſking one's life out of curioſity, by way of paſtime, or for a frolick, and at the ſame time pronounce it ſinful to venture that very life once for all, on a very ſmall riſk, in order to prevent a much greater? Such is the conſequence the adverſaries of Inoculation are reduced to, even upon the ſuppoſition that it is not altogether void of danger; but what if this pretended danger ſhould prove none at all, as a very eminent phyſician intends to demonſtrate?

I will not engage in a diſſertation on a ſubject, which requires great knowledge in the theory and practice of phyſic, but confine myſelf merely to ſome reflections. Wherein does the danger of Inoculation conſiſt? Is it in the operation itſelf, or in its conſequences? It will be anſwered, *In both. A purulent matter is taken from a body tainted with a dangerous diſeaſe, and convey'd into the blood of a perſon in health. Is not this a ſhocking thing? Can ſuch a cauſe fail of producing ſome pernicious effect?*

Let us remove this parade of words, before we begin to anſwer the facts; let us deſpiſe a falſe and childiſh delicacy, and remember, that had not reaſon got the better of prejudice, and of that natural reluctance which ariſes on ſeeing the diſſection of a human body, anatomy would be ſtill in its infancy. Does not nature recoil at the amputation of a limb, the perforation of the thorax in the empyema, the cutting for the ſtone, trepanning, *&c?* Theſe are dreadful operations, and their ſucceſs is doubtful; whereas Inoculation is but a ſcratch or cut hardly to be felt, while it ſecures us from the fear of a mortal diſtemper, and prevents the ill conſequences

that attend it, the leaſt of which is the being diſfigured for life.

I have diſtinguiſhed in Inoculation between the operation itſelf and its effects. As to the former it is evidently ſafe. A ſlight inciſion, which does but juſt divide the ſkin, differs no otherwiſe from a common ſcratch than by being leſs painful; and can a ſcratch prove mortal?

As to the effects, I refer it to experience. I ſhall not ſtand to examine whether the infection is only in the air we breathe, that is to ſay in an external cauſe, whence it would follow, that the choice of the ſubject that ſupplies the matter for Inoculation is indifferent, when it is drawn at the ſame time: I ſhall only obſerve, that as we are free to chuſe a wholeſome ſubject with the kindeſt and beſt ſort of ſmall-pox, they who take this precaution cannot be chargeable with having convey'd the ſeeds of a dangerous diſeaſe into the veins of a perſon in health. Beſides this matter is not gather'd till the puſtules begin to dry, at which time all the bad ſymptoms ceaſe, and the danger, if any, is entirely over.

In ſhort, the phyſicians and the vulgar, who are ſeldom of one mind, all agree in this, that a ſimple mild ſmall-pox, at-

tended with no accidents foreign to the diſtemper, is but a purification of the blood, operating without any danger to life; the danger therefore can only proceed from the malignancy of the infection, or the bad diſpoſition of the ſubject. Now it has been proved by thouſands of experiments made in *Aſia*, time out of mind, and in *Europe* for near a century paſt, that provided the neceſſary precautions are taken, ſuch as chuſing the propereſt ſeaſon and circumſtances, preparing the patient, *&c.* Inoculation produces none but a ſimple ſmall-pox, in which great part of the venom drains off through the inciſions: For that very reaſon it is hardly ever confluent, conſequently leaves no marks, and is ſeldom attended with the fever of ſuppuration, ſo common, and ſo fatal in the natural ſmall-pox. Need we any other arguments to convince us that the patient's life is ſafe under Inoculation, and that the very few accidents it has been attended with, muſt be imputed to ſome other cauſe? It is evident by the laws of chance that of a great number that are inoculated, ſome one may and muſt die, not only within forty days after, but within a week, perhaps the very day of the operation, for the ſame reaſon that this perſon might have died

a week, a day, or an hour before. Inoculation prevents the danger and the conſequences of the ſmall-pox, but I don't propoſe it as a preſervative againſt ſudden death [p].

What I have ſaid before, that the ſmall-pox deſtroys, maims, or diſfigures one fourth of mankind, may be looked upon as hyperbolical; but I prove it thus:

Towards the end of the ſixteenth century, about fifty years after the diſcovery of *Peru*, this diſtemper was carried over from *Europe* to *America* by way of *Carthagena*; it over-run the continent of the new world, and deſtroy'd upwards of 100,000 Indians in the ſingle province of *Quito*. I have found this account in an ancient manuſcript in the cathedral of that city. I have ſince found, by my own obſervation, in the *Portugueſe* ſettlements bordering upon the river of the *Amazons*, that the ſmall-pox was fatal to all the natives; I mean the original *Americans*. Mr. *Maitland* [q], to whom *England* is indebted for the practice of Inoculation, tells us, that ſome years, through-

[p] However I have been told that a man threaten'd with an apoplexy might be preſerved from it by bleeding, diet, and the very ſame regimen preſcribed to thoſe who are preparing for Inoculation.

[q] Surgeon to Mr. *Wortley Montagu*, and the ſame who inoculated that ambaſſador's children at *Conſtantinople* and *London*.

throughout the *Levant*, the ſmall-pox is like a kind of plague, that ſweeps away at leaſt one third of thoſe who are ſeized with it. If we conſult the liſts inſerted in or added to Dr. *Jurin*'s treatiſe, eſpecially thoſe of Dr. *Nettleton*, who had enquired from houſe to houſe in ſeveral towns, of the number of ſick and dead within the year; which of all others is the ſureſt way to arrive at any certainty, we ſhall find that in ſome years one fifth or more have died of thoſe who had the ſmall-pox in *London* and in ſeveral counties of *England*. Let us however keep to Dr. *Jurin*'s concluſion, who upon a moderate computation makes it out, that in the common run of the ſmall-pox, one ſeventh of the ſick generally dies. But among thoſe who outlive it, how many either totally or partly loſe their ſight or hearing? How many are left conſumptive, weakly, ſickly, or maimed? This is a conceſſion made even in that very theſis, which repreſents Inoculation as a criminal practice[2]. How many are diſfigured for life by horrid ſcars, and become ſhocking objects to thoſe who approach them? Laſtly, in that ſex,

[1] See his *Account of the Succeſs of Inoculation.*

[2] *Quos non jugulat, deformitate turpat, orbat aegrotis, &c. Queſtio Medica in Scholis Medicorum. Par.* 30 *Decem.* 1723.

ſex, where outward form is ſo great an advantage, how many loſe, together with their beauty, ſome their huſbands love, others the proſpect of a happy ſettlement; whence a real loſs muſt accrue to the ſtate?

Granting the number of thoſe who ſuffer by the effects of the ſmall-pox to be no more than equal to the number of thoſe who die of it, after having eſcaped the firſt dangers of childhood, it will ſtill be true that of 100 perſons this ſickneſs carries off 13 or 14, that is a ſeventh of the whole, and that the like number wear the marks of it for the remainder of their life. Having thus 28 witneſſes out of 100, had I not a ſufficient warrant to ſay, that this ſcourge deſtroys or injures one fourth part of mankind?

It appears from the particulars above-mentioned, that Inoculation prevents all theſe misfortunes. It is not only true that the inoculated ſmall-pox is not mortal, nor even dangerous, but likewiſe that it leaves nothing behind it, that can awaken any ſad recollection.

Theſe are not the wild conjectures of a ſyſtematic brain, but the reſult of facts diſcuſſed on both ſides, collected and publiſhed to the world by learned divines, able phyſicians,

phyſicians, and ſkilful Surgeons. I have cited my authorities. The names of the Biſhop of *Worceſter*, of Dr. *Jurin* Secretary to the *Royal Society*, and of Mr. Serjeant *Ranby*, are at the head of the liſt, and make it needleſs to produce any more.

Struck with the depoſitions of ſo many reſpectable witneſſes, who for theſe thirty years paſt have borne teſtimony to the uſefulneſs of Inoculation, Dr. *Hecquet* would no longer ſay, that it is an old woman's remedy not yet ſupported by practice, which we want to thruſt upon the phyſicians in this rough ſtate. Upon better information, he now would yield to evidence; his ſtrict probity and love of truth would make him an advocate for Inoculation, who was while living one of its warmeſt opponents.

Prudence required that we ſhould not too precipitately embrace a novelty, though ever ſo ſpecious. It was highly proper that time ſhould be ſuffered to caſt new lights upon it. Thirty years experience has clear'd up all doubts, and aſcertain'd the ſafety of this method. The proportion of thoſe who have died of the ſmall-pox in *England* is leſs by one fifth [t], ſince Inoculation is become more common. People have at length oper'd

[t] Biſhop of *Worceſter*'s Sermon.

open'd their eyes. It is now demonſtrated in *London*, that the inoculated ſmall-pox is both ſafer than the natural, and preventive of it; and in a country where the outcry has been ſo furious againſt this practice, there is ſcarce an enemy left, who dares to attack it openly. The force of evidence, and the ſhame of defending a deſperate cauſe, have ſilenced its moſt paſſionate adverſaries. Let us in our turn open our eyes; it is high time we ſhould examine, and avail ourſelves of what paſſes ſo near us.

The fable of the Minotaur, and of that ſhameful tribute which the *Athenians* were deliver'd from by *Theſeus*, ſeems at this day to be realized in *England*. A fell monſter had for twelve centuries together fed upon human blood*. Of a thouſand perſons, who had eſcaped the firſt dangers of childhood, that is, of the choiceſt part of mankind, he frequently ſelected 200 victims. Hereafter he will only ſeize on thoſe, who unluckily fall in his way, or come within his reach without ſufficient caution. A wiſe and learned nation, our neighbours and our

* The ſmall-pox, was not known in *Europe* till the beginning of the ſixth century; it was brought by the *Arabs*. It appears to have been of a longer ſtanding in *China*. See *Father d'Entrecolles's Letter*; *Lettres Edifiantes, Vol. XX.*

our rivals, have not diſdained the inſtructions of an ignorant people, how to ſubdue and tame this monſter; they have learnt the art of transforming him into a domeſtic animal, and make him ſerviceable to the ſaving thoſe very lives, which would have fallen a prey to his voracious jaws.

While among us the ſmall-pox continues its devaſtations, we ſtill remain idle ſpectators; as if *France*, becauſe it has fewer reſources to increaſe her numbers, ſtood in leſs need of inhabitants than *England*. If we have not had the honour of ſetting the example, let us at leaſt have the reſolution to follow it.

It has been proved * that the fourteenth part of mankind annually dies of the ſmall-pox. Therefore of 20,000 perſons that die yearly in *Paris*, this dreadful diſtemper carries off 1440. The greateſt enemies to Inoculation have pretended indeed that it was fatal to one in fifty. A falſe and unjuſt accuſation; but ſuppoſe it true. Then of 1440 people, 29 would die if they were inoculated; ſo that by the very account of the opponents, you would ſtill ſave 1411*.

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* See the yearly *Bills of Mortality* in and about *London*, for 42 years, in Dr. *Jurin's* book, and the ſupplements to them in *Kirkpatrick's Analyſis*.

* The author here ſuppoſes thoſe perſons only to be

It is therefore plain to a demonſtration, that the introducing of Inoculation would annually ſave upwards of 1400 lives in the ſingle city of *Paris*, and more than 28,000 throughout the kingdom, ſuppoſing *Paris* to contain but the 20th part of the inhabitants of *France*.

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inoculated who would in the courſe of the year have died of the natural diſtemper. But as it is impoſſible to diſtinguiſh them beforehand, ſo it is natural to believe that Inoculation would have ſaved fewer of the ſubjects who are ill diſpoſed for the diſtemper, than it doth of thoſe who are properly choſen for the operation. To rectify this defect, we may ſay, that if at *Paris* 1440 perſons die annually of the ſmall-pox, ſeven times that number, or upwards of 10,000 people may be ſuppoſed to have had this diſtemper in the ſame period of time. If then 10,000 perſons were every year inoculated in that city, there would die 200 under the operation, by the proportion of one in fifty. This number ſubtracted from the former one of 1440 makes the number of lives ſaved at *Paris* to be 1240, and near 25,000 for the kingdom of *France*. I have the pleaſure of finding this way of reaſoning agreeable to what the learned Biſhop of *Worceſter* has made uſe of to compute the number of lives that might annually be preſerved in *London* by Inoculation; (ſee his ſermon, p. 21, and 22.) with this difference only, that inſtead of in one fifty, (a proportion certainly much too great) he allows but one in two hundred to die by that artificial infection. On the ſuppoſition of this friend to Inoculation, of 2000 perſons who die every year in this metropolis of the natural ſmall-pox, no leſs than 1930 might be preſerved, and upwards of 1700 on that of the greateſt enemies to the practice.

With what horror do we read, that in the ages of darkneſs and what we call barbarity, the ſuperſtition of the *Druids* did blindly ſacrifice human victims to their deities! yet in this enlighten'd, polite, and philoſophic age, as we proudly call it, we are not aware, that every year by our ignorance, our prejudices, our indifference to the good of mankind, we devote to death, in *France* only, 28,000 ſubjects which it would be in our power to preſerve to the ſtate. Surely we muſt confeſs we are neither philoſophers nor patriots.

But if it be true that the public welfare requires the eſtabliſhment of Inoculation, ſhould not a law be enacted to enforce it, by obliging all parents to inoculate their children? It is not within my province to decide this queſtion. At *Sparta*, where children were the property of the ſtate, ſuch a law would doubtleſs have paſſed; but our manners are as widely different from theirs, as our times are diſtant from thoſe of *Lycurgus*. Beſides, this law would not be neceſſary in *France*; encouragement and example would be ſufficient, and perhaps have more weight.

Let us carry our views into futurity. Will Inoculation be one day eſtabliſhed amongſt

us? I do not doubt it. Let us not ſo far diſhonour ourſelves as to deſpair of the progreſs of human reaſon. She advances indeed but ſlowly: ignorance, ſuperſtition, prejudice, fanaticiſm, an indifference for the public welfare, are ſo many obſtacles that retard her march, and diſpute every inch of ground with her; but after ages of ſtruggle, at laſt comes the time of her triumph. The greateſt of all the obſtacles ſhe has to ſurmount is that indolence, that inſenſibility, that liſtleſſneſs for every thing that does not immediately and perſonally concern us; This indifference has been frequently extol'd as a virtue, and adopted by ſome philoſophers as the reſult of long experience. They have, and indeed ſpeciouſly, urged the ingratitude of men, the inefficaciouſneſs of all our endeavours to undeceive them, the vexations we draw on ourſelves by pointing out the truth, the contradictions we are to expect, and the hazard of forfeiting our tranquillity, which theſe ſages call the moſt deſirable thing in the world.

Theſe conſiderations, I muſt confeſs, are enough to damp the warmeſt zeal; but the wiſe have ſtill one expedient left, which is to ſhew truth afar off, to ſow the ſeeds of it

if poſſible, and patiently to wait till time and circumſtances ſhall bring it to maturity.

Every inſtitution, how uſeful ſoever, requires time and the concurrence of favourable circumſtances to ſecure its ſucceſs; the public welfare alone is no where a ſufficient ſpring of action.

Was it the good of mankind, that drove the *Circaſſians* and *Georgians* into Inoculation? Let us bluſh for them, ſince they are men like ourſelves, at the vile motive that induced them to contrive this ſalutary practice, which was no other than ſordid intereſt, and the deſire of preſerving the beauty of their daughters, in order to make a better market of them among the *Perſians* and *Turks*. What was it that firſt introduced and afterwards revived Inoculation in *Greece*? The contrivance of an artful and ſelfiſh woman, who found means to levy a tax upon the fears and ſuperſtition of her countrymen. A cruel epidemy, that carried terror and deſolation into the moſt illuſtrious families, produced the ſame effect at *Geneva*[z]. In *Guiana*, a timorous monk was induced, by fear, perhaps by deſpair at ſeeing all his *Indians* cut off one by one, to venture upon a method he was but little acquainted with,

[z] See Mr. *Guyot*'s account in the *Memoirs of the Academy of Surgery*, Vol. II.

with, and which he himſelf thought unſafe. Nobler motives undeniably introduced Inoculation into *England*. Nothing redounds more to the honour of that nation, of the *College of Phyſicians*, and of the *Britiſh* Monarch, than the reſolution and wiſe precautions, with which they admitted this method, though not till it had ſtruggled with a thirty years contradiction.

Although the whole kingdom of *France* were convinced of the uſefulneſs and importance of this practice, it can never make its way among us, without the countenance of the government; and the government will never reſolve to countenance it, without conſulting the moſt reſpectable authorities in ſuch matters. It is therefore the buſineſs of the faculties of divinity and phyſic, of the academies and chief magiſtrates, and of the learned, to remove all thoſe ſcruples fomented by ignorance, and make the people ſenſible that their own advantage, chriſtian charity in general, the welfare of the ſtate, and the preſervation of mankind, are all concern'd in the eſtabliſhment of Inoculation. In an affair that relates to the public welfare, it is incumbent on a thinking nation, to enlighten thoſe who are capable of receiving light, and lead

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that crowd by authority, who are not to be wrought upon by evidence.

Are experiments yet wanting? Do we ſtand in need of further information? Let the managers of our hoſpitals have orders carefully to diſtinguiſh in their annual liſts of ſick and dead the different kinds of diſeaſes, and the numbers that are ſeized with them, according to the method of the bills of mortality in *England*. Let Inoculation be tried in one of theſe hoſpitals upon a hundred ſubjects, who ſhall voluntarily ſubmit to it; let a like number of patients of the ſame age be taken in with the natural ſmall-pox; let all theſe be conſtantly attended by the phyſicians and ſurgeons, and the whole proceſs carried on under the inſpection of an overſeer of known abilities, integrity and zeal. Then let the reſpective liſts of dead be compared and laid before the public. If any doubts remain, the means of removing them will not be wanting, whenever we are willing to be informed.

Inoculation, I repeat it, will one day prevail in *France*, and then we ſhall wonder that we have not admitted it ſooner. But when will that day come? Shall I venture to ſpeak it? It will be when an event like that which, not two years ſince, ſpread

ſuch a general conſternation amongſt us; though it was indeed changed into tranſports of joy[y], ſhall rouze the public attention; or, which heaven avert! it will be at the fatal time of a like cataſtrophe to that which overwhelmed *France* with grief, and well nigh ſhook the throne in 1711[z]. Had we then been acquainted with Inoculation, the recent ſmart of that ſtroke, and the fear of that which threaten'd our deareſt hopes, had made us gladly accept as a preſent from heaven that preſervative, which now we ſlight; but, to our ſhame be it ſpoken, to the ſhame of that proud reaſon which does not always ſufficiently diſtinguiſh us from brutes, the paſt and the future make hardly any impreſſion upon us, the preſent only affects us. Shall we never grow wiſe but by dint of misfortunes? Shall we not build a bridge at *Neuilly*, till *Henry* IV. ſhall have run the riſk of his life in croſſing the ferry? Shall we defer widening our ſtreets till he has been murder'd in them?

P. S.

[y] The dauphin's having the ſmall-pox.

[z] The death of the dauphin *Lewis*, grandfather to *Lewis* XV. who died of the ſmall-pox *April* 14, 1711, aged 49. The emperor *Joſeph* died of it the 17th of the ſame month, in the 33d year of his age.

P. S. Some will perhaps call all this a paradox, which ſhould thirty years ſince have loſt that name. But this objection I need not apprehend in the center of the capital. I might on the contrary, upon much better grounds, be accuſed of having ſet forth none but common truths, well known to all who are capable of reflection, and informed a learned audience of nothing new. May this Eſſay draw upon me no worſe a reproach than this! far from fearing, I wiſh for it. But above all, may the following be number'd among thoſe obvious truths, which it was needleſs for me to mention, that *had Inoculation prevailed in* France *in* 1723, *near a million of lives had by this time been ſaved to the ſtate, excluſive of poſterity.*

FINIS.

P. S. Some will perhaps call all this a paradox, which should thirty years since have left that name. But this objection I need not apprehend in the center of the capital. I might on the contrary, upon much better grounds, be accused of having let fall none but common truths, well known to all who are capable of reflection, and informed a learned audience of nothing new. May this Deity draw upon me no worse a reproach than this! But from [illegible] Above all, may the [illegible] number'd among those of [illegible] it was needless for me [illegible] pre-cautions [illegible] million of [illegible] Have but [illegible] to [illegible] caution).

MVSEVM BRITAN NICVM

FINIS.